



MEAU
Industrial Computers



MC200

PANEL COMPUTERS

(Manual Part Number MAN-PNLPC-001)



Manual P/N MAN-PNLPC-001

Designed, and Manufactured specifically for Mitsubishi Electric Automation, Inc., by AVG

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WARNING!

Programmable control devices such as Panel Computers must not be used as stand-alone protection in any application. Unless proper safeguards are used, unwanted start-ups could result in equipment damage or personal injury. The operator must be made aware of this hazard and appropriate precautions must be taken.

In addition, consideration must be given to the use of an emergency stop function that is independent of the programmable controller.

The diagrams and examples in this user manual are included for illustrative purposes only. The manufacturer cannot assume responsibility or liability for actual use based on the diagrams and examples.

CAUTION

Do not press the Panel Computer touchscreen with any sharp objects. This practice may damage the unit beyond repair.

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Manual Organization

The table, below provides an overall description of the topics covered within this manual.

Chapters		
	Introduction	Provides Manual Organization, and lists what you need to get started. Discusses how to get help with questions or problems you might encounter through Technical Support.
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	Models and Equipment	Provides you with a table listing the various models, their part numbers and features. Lists the optional equipment available.
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	Specifications	Specifications provide detailed information. Included are display size, connector and expansion card information, CPU type; service power requirements; operating and storage temperatures; available memory; serial communications specs; dimensions, weight, etc.
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	Installation	Shows the mounting and cutout dimensions for the panel models.
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	External Components	Provides location and description of the available connectors and expansion card slots. Provides location and description of switches, push buttons, display brightness potentiometer, and LEDs. Discusses Communication Setup.
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	BIOS Setup	Consult PCA1675 Embedded Processor Board User Manual, Part Number MAN-P1675-001.
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	Maintenance and Upgrades	Step-by-step instructions to install an expansion card are provided. Provides basic maintenance tasks to preserve data. Describes cleaning of touch screen and housing. Lists chemicals that may or may not be compatible with the touchscreen.

1 INTRODUCTION

Introduction

The Mitsubishi Electric Automation MC200 Series Panel Computer features a 700 Mhz Intel Pentium/Celeron processor single board computer, in various sizes to fit your application needs. An active matrix LCD, resistive-type touchscreen is mounted in a rugged steel enclosure, with Zinc plating for optimum noise immunity, along with a flat NEMA4/4X sealing bezel to form an aesthetically pleasing package.

An MC200 Series Panel Computer can run visual, maintenance, information, and control software with the power to direct machine processes, collect critical data, and communicate with the front offices for high level production interaction.

The MC200 Series Panel Computer is a full featured computer able to withstand harsh environments. Its rugged design, high performance and easy access for upgrade or maintenance make the MC200 ideal for applications requiring the highest reliability, as with all Mitsubishi electronic components.

Operating systems are included as part of every package. Optional operating systems, and application software can be installed upon request, providing an “Out of the Box” solution for your custom application. The computers are CE, UL/CUL & FCC Class I compliant, and are rated to operate from 0 to 50°C, at a non-condensing humidity of 10–95%.

The MC200 Series Panel Computer is currently available in 3 sizes — 10.4-inch, 12.1-inch, and 15-inch — and is designed to be protected from oil, dust or water damage.

This manual will take you through the steps necessary to get your Flat Panel Computers installed and running in the shortest possible time. This manual covers Models MC220, MC240, and MC250.



What you need to get started:

Hardware

- MC200 Industrial Panel Computer Series:
MC220 — 10.4-inch XP/e (embedded)
MC240 — 12.1-inch XP/e (embedded)
MC250 — 15-inch XP/e (embedded)

Software

- Windows XP/e (embedded)

Technical Support



Technical Support

If you are having difficulty with a particular aspect of installation or setup, technical support is available at **1-800-950-7781 (Auto Attendant, Option 4)** or visit our website at **www.meauic.com**.

1 INTRODUCTION

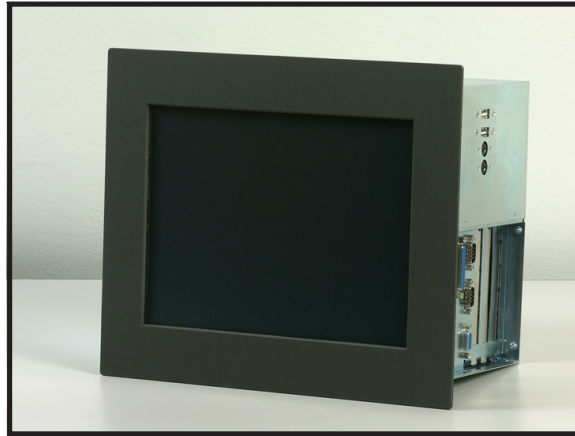
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Models

MC220 10.4" Windows XP/e Industrial Panel Computer

MC240 12.1" Windows XP/e Industrial Panel Computer

MC250 15.0" Windows XP/e Industrial Panel Computer



Accessories and Optional Software

There are replacement parts and optional equipment available to customize or upgrade the Industrial Panel Computer to fit your application. The following tables provide you with a list of this equipment.

Accessories	
Product	Part Number
32MB Disk on Chip Flash Memory	MC600
64MB Disk on Chip Flash Memory	MC601
128MB Disk on Chip Flash Memory	MC602
256MB Disk on Chip Flash Memory	MC603
40GB HDD	MC610
256MB MEM	MC615
512MB MEM	MC616
Standard Keyboard	MC620
Keyboard with Trackball	MC621
Multimedia I/R board	MC622
19" R/M Industrial Membrane Keyboard	MC623
2 Button Mouse	MC624
Modem, PCI, 56K V.90	MC630
2-way Video Splitter/Repeater	MC635
Shielded Video Cable - 6'	MC640
Shielded Video Cable - 10'	MC641
Shielded Video Cable - 30'	MC644
Shielded Video Cable - 60'	MC646
RS-232 Serial Cable - 6'	MC651
RS-232 Serial Cable - 10'	MC652
RS-232 Serial Cable - 30'	MC655
RS-232 Serial Cable - 60'	MC656

Optional Software	
Product	Part Number
Windows NT 4.0 Workstation	MC701
Windows 2000 Server	MC702
Windows 2000 Pro	MC703
Windows XP Pro	MC704
Windows XP Server	MC705
MS DOS	MC706
LINUX Server	MC707
LINUX W/S	MC708
Windows NT/e (Embedded)	MC710
Windows XP/e (Embedded)	MC711
Windows CE 3.0 (Embedded)	MC712
VX Works	MC713
Microsoft Access	MC750
Microsoft Office	MC751
Microsoft Excel	MC752
Procomm	MC760
PC Anywhere	MC761
Norton Anti-Virus	MC762
MacAfee Anti-Virus	MC763

COMPUTER SPECIFICATIONS

CPU Type:	700 Mhz Intel Celeron Processor
Memory:	128 MB minimum (expandable up to 512 MB)
BIOS:	Flash ROM
SSD:	Optional — Disk On Chip 32 MB minimum (up to 256 MB)
Drive:	40 Gb Hard Drive
Serial Ports:	1 dedicated RS-232 port, 1 RS-232/RS-422/RS-485 port
Parallel Port:	SPP/EPP/ECP supported (configurable to LPT1)
CD ROM:	Optional — external CD ROM drive (through USB port)
LAN:	32-bit PnP Ethernet controller 10 Base-T/100 Base-TX (RJ-45)
USB:	2 Ports (1.1 compliant)
PS/2 Interfaces:	1 Mouse, 1 Keyboard
Floppy DD:	Optional external Floppy Disk Drive (through USB port)
Operating System:	Windows XP/e (embedded) (Standard)
Watchdog Timer:	12 level timer with timeout intervals from 0.5 – 30,000 seconds

DISPLAY SPECIFICATIONS

Display:	MC220: 10.4" TFT Flat Panel MC240: 12.1" TFT Flat Panel MC250: 15.0" TFT Flat Panel
Touch Screen:	Analog Resistive Type
View Angle:	U/D: 150, R/L: 120
Screen Pixels:	MC220/MC240: SVGA 800 x 600 MC250: XGA 1024 x 768
Display Brightness:	MC220: 230 nits MC240/MC250: 250 nits
Backlight Bulb Life:	MC220: 20,000 hours MC240: 40,000 hours MC250: 35,000 hours (manufacturer's expected half-life rate)
VGA Output:	XGA Output (60 ft. maximum)

MECHANICAL SPECIFICATIONS

Housing Material:	Stud Mounted Metal Bezel — MEAU Black
Connectors:	COM1 and COM2 D-SUB 9-pin male Serial Ports, LPT1 D-SUB 25-pin female Parallel Port, Two P/S 2 Ports, One RJ-45 for Ethernet, One D-SUB 15-pin female Video port, Two USB ports (1.1 compliant)
Dimensions:	MC220/240: 11.00" x 13.00" x 6.928" (279.40 x 330.20 x 175.971 mm) MC250: 12.50" x 16.250" x 7.750" (317.50 x 412.750 x 196.850 mm)
Weight:	MC220/240: 7.0 kg MC250: 8.0 kg
Expansion Slots:	3 PCI slots for I/O cards PCMCIA: Optional (type 2) (uses one PCI slot)
Power Supply:	115/230 VAC @ 50/60 Hz, ATX 145 Watts
Cooling Fan:	Optional
Environmental:	NEMA 4/4X (indoor use only) Temperature: Operating — 0 to 50° C; Non-operating —20 to +60° C Relative Humidity: 10 to 95% noncondensing Agency Approvals: UL/CUL , CE Mark, FCC compliant

INSTALLING THE INDUSTRIAL PANEL COMPUTER — OVERVIEW

Installing the PANEL COMPUTER requires the following three major steps:

**Mount the
Panel Computer**



**Make
Connections**



Setup

The Panel Computer is a front-panel stud mount unit. Mounting of the unit requires a panel cutout, and drilling fourteen (14) holes in the mounting surface for the mounting studs. Please see the *Mounting* section beginning on page 10 for mounting diagrams and instructions.

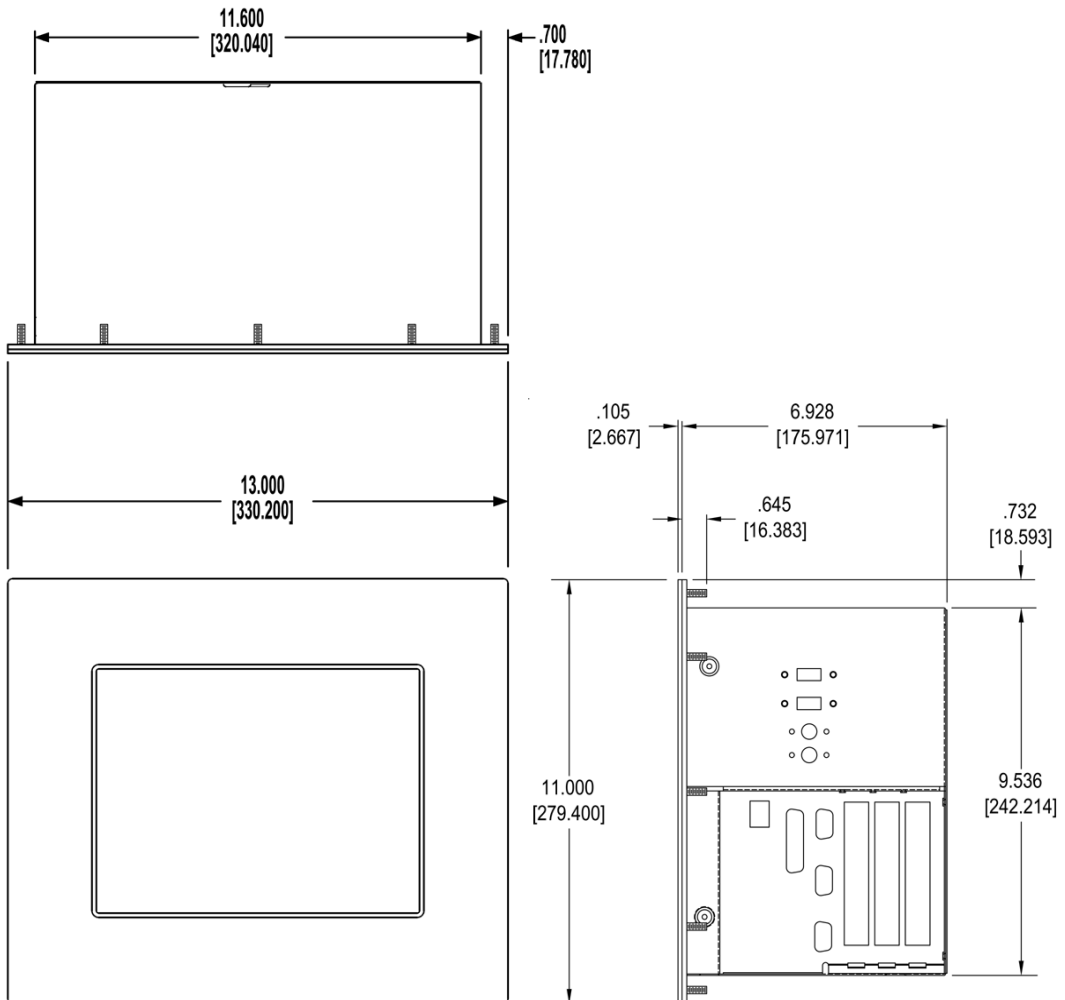
Now that your Panel Computer is mounted, you are ready to connect your unit to the power source, and peripheral devices. The Panel Computer's Serial Ports support one RS-232 COM1 and one RS-232/RS-422/RS-485 COM2 connector. (If RS-422 or RS-485 is required, refer to the PCA1675 Embedded Processor Board Manual, MAN-P1675-001.) The Parallel Port supports SPP/EPP/ECP. The USB Port supports up to 2 ports (1.1). Note that the Panel Computer is a 115/230 VAC powered unit. See the section on *External Components*, beginning on page 14 for further information.

The Panel Computer has some adjustable features and tests. To change any value, enter the SETUP MODE on powerup and follow the procedures provided in the *Communications Setup* section beginning on page 19.

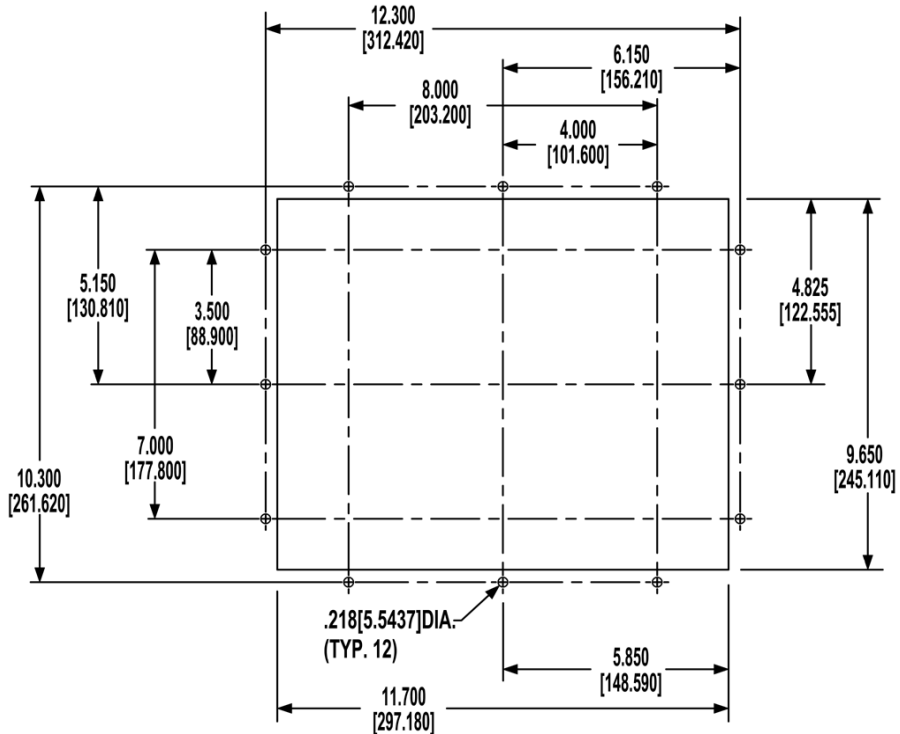
Mounting

The Panel Computer is a panel-mount unit. The following diagrams show the outline and cutout dimensions necessary to mount the panel using the studs.

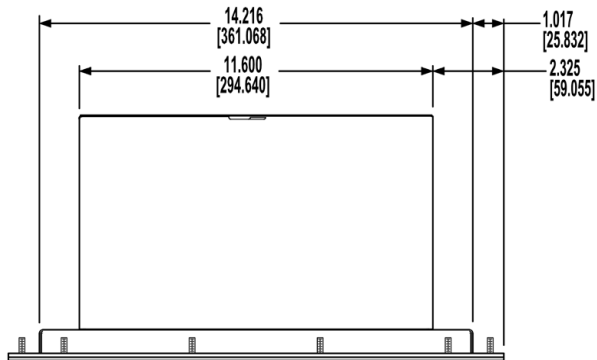
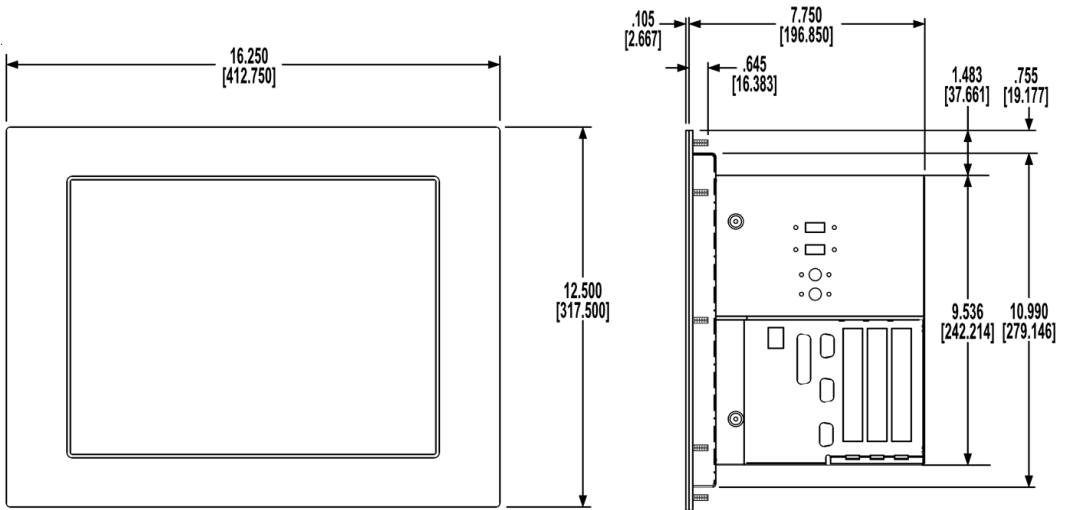
10.4" and 12.1" Industrial Panel Computers Models MC220 and MC240 Outline Dimensions



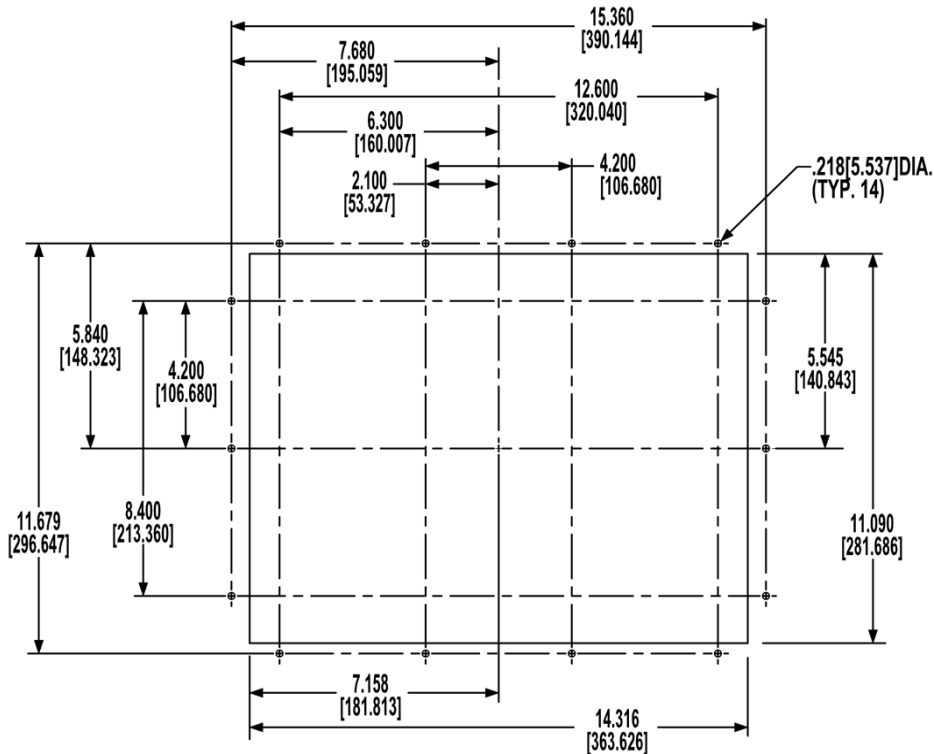
**10.4" and 12.1" Industrial Panel Computers
 Models MC220 and MC240
 Cutout Dimensions**



15" Industrial Panel Computer — Model MC250 Outline Dimensions



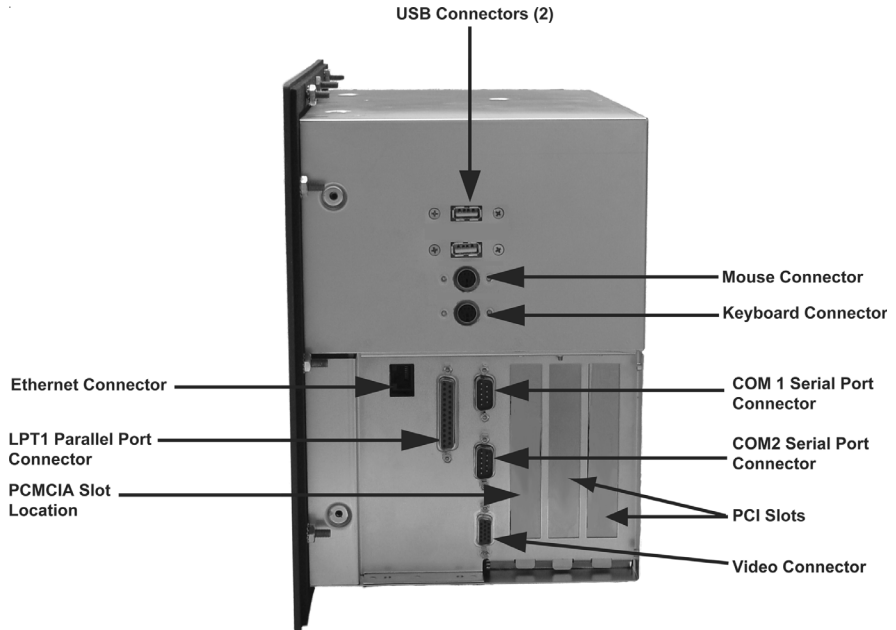
15" Industrial Panel Computer — Model MC250 Cutout Dimensions



5 EXTERNAL COMPONENTS

CONNECTORS

Side Panel



Located on one side of the Industrial Panel Computers are the following connectors:

Two USB (Universal Serial Bus) Connectors

There are two USB connectors located on the side of the unit. Many devices now use this type of connector (i.e., scanner, printer, mouse, etc.). You can also use the USB to connect to an external Floppy Disk Drive or external CD ROM Drive. One or both ports may be used.

One KEYBOARD Connector

A personal system/2 (PS/2)–style keyboard port.

One MOUSE Connector

A personal system/2 (PS/2)–compatible mouse port.

10/100 ETHERNET

10/100–megabit-per-second (Mbps) network interface controller (NIC) provides all the functions of a separate network card with Wakeup on LAN technology. The NIC supports both the 10 BASE-T and 100 BASE-TX Ethernet standards.

LPT1

Parallel Port (LPT1) is a 25-pin male D-Sub connector that is used to connect to a printer.




VIDEO

A 15-pin D-sub female connector for attaching a VGA monitor to the Panel Computer. The video signal sent to an external VGA monitor will duplicate the video resolution and image on the flat panel display.

COM1

COM2

COM1 and COM2 serial ports are 9-pin male D-Sub connectors. COM1 is a dedicated RS-232 port. COM2 is a RS-232/RS-422/RS-485 port. **Please Note: Manufacturer's default for COM2 is RS-232. To select RS-422 or RS-485, use the JP3 Jumper settings shown below.**

COM 2 FUNCTION	JUMPER SETTING (pin closed)	JUMPER ILLUSTRATION
RS-232	Open	 JP3
RS-422	1-2, 5-6, 7-8, 9-10, 11-12, 13-14, 15-16, 17-18, 19-20	 JP3
RS-485	1-3, 4-6, 7-8, 9-10, 11-12, 13-14, 15-16, 17-18, 19-20	 JP3

5 EXTERNAL COMPONENTS

PCMCIA Slot (optional)

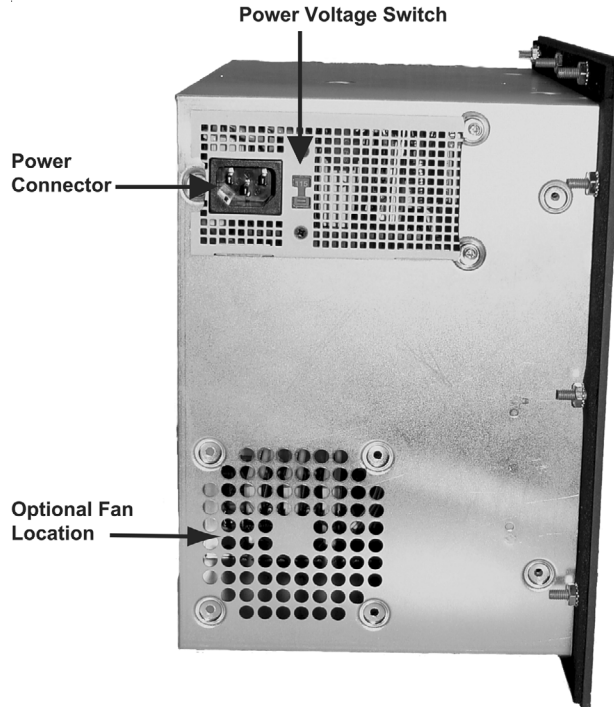
PCMCIA (Personal Computer Memory Card International Association) are small form factor devices that are used in a variety of applications and devices, particularly in digital cameras, lap top computers, PDAs, and many other mobile devices. You can order a Panel Computer with one installed or install your own.

2 PCI Slots

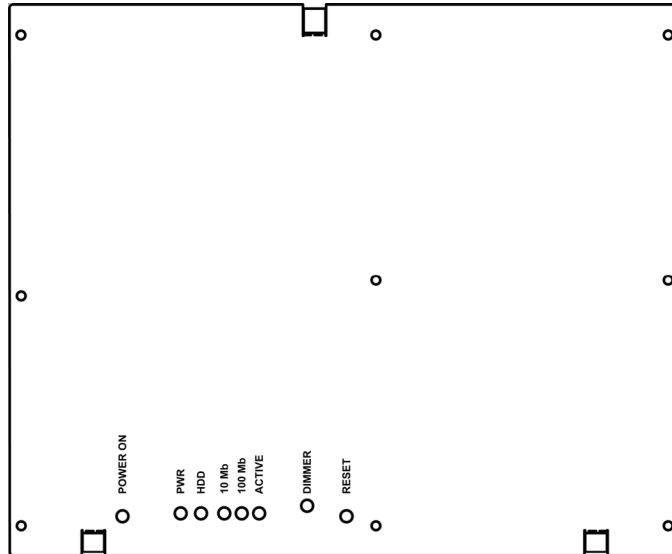
The Panel Computer will support the addition of two 32-bit PCI (Peripheral Component Interconnect) Cards if you want to upgrade your system.

On the other side of the Panel Computer you will find the **Power Connector** and a **Power Voltage Switch**. Use the power voltage switch to select 115 or 230 V AC. Also shown is the location of the optional fan.

Side Panel



Rear Panel



Push Buttons

Located on the bottom rear panel, you will find a recessed **POWER ON** push button and a recessed **RESET** push button. There is also a recessed **DIMMER** potentiometer to adjust the display brightness on the 10.4" and 15" models (not available on the 12.1" model). Use a small flat blade screwdriver to adjust the DIMMER pot and to access the POWER ON and RESET push buttons.

LEDs

There are also 5 LEDs located on the bottom rear panel. They are labeled **PWR** to indicate power is applied to unit; **HDD** to indicate the hard disk drive is active; **10Mb**, **100Mb**, and **ACTIVE** all indicate Ethernet activity.

BIOS Setup

Once you have the Panel Computer installed and the peripheral devices connected, you are ready to power up the computer. Press the POWER ON push button located on the rear panel of the computer (as described on page 18).

Consult the PCA1675 Embedded Processor Board Manual, part number MAN-P1675-001 to set up your Industrial Panel Computer's BIOS.

COM2 Serial Port Setup

The default setting is RS-232. For RS-422 or RS-485 communications, install jumpers as shown on page 15. For more information, see the PCA1675 Embedded Process Board Manual, part number MAN-P1675-001.

7 MAINTENANCE AND UPGRADES

UPGRADES



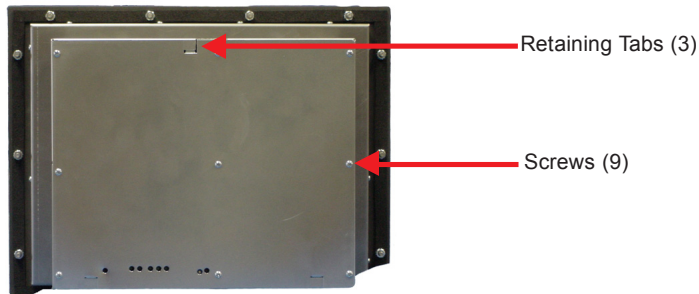
CAUTION: Before opening the Computer or handling any expansion cards, be sure to protect the equipment from electrostatic discharge (ESD) by properly grounding yourself.

Expansion Card Installation

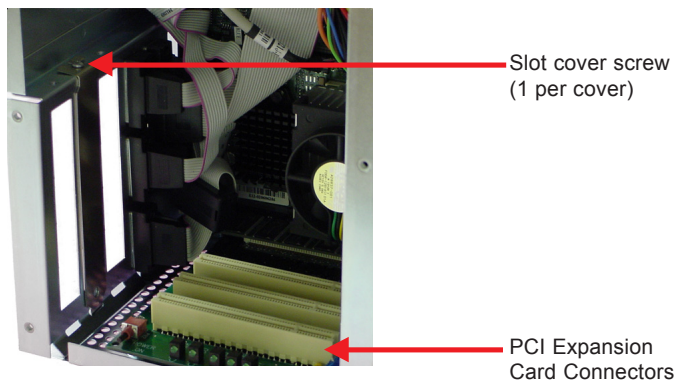
The Panel Computers can accommodate up to 2 PCI expansion cards. To install an expansion card:

1. Disconnect the power source from the Panel Computer.
2. To open the rear of the enclosure, remove 9 screws from back captive panel. Panel is still held in place by 3 retaining tabs, one on top and two on the bottom. Just slide the rear panel to the right until the top tab aligns with the hole in the housing. Swing top out and lift back panel away from housing.

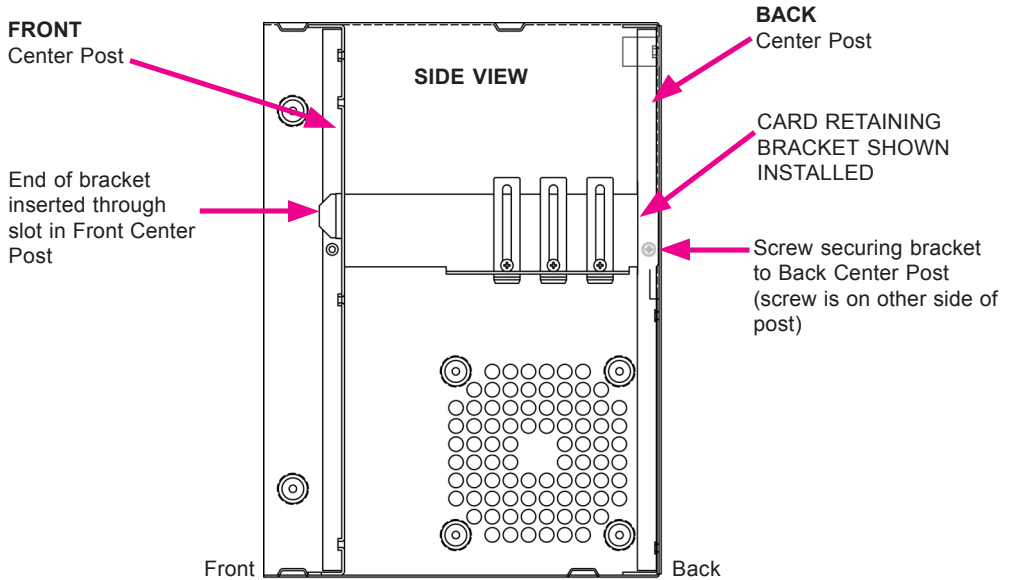
Rear panel



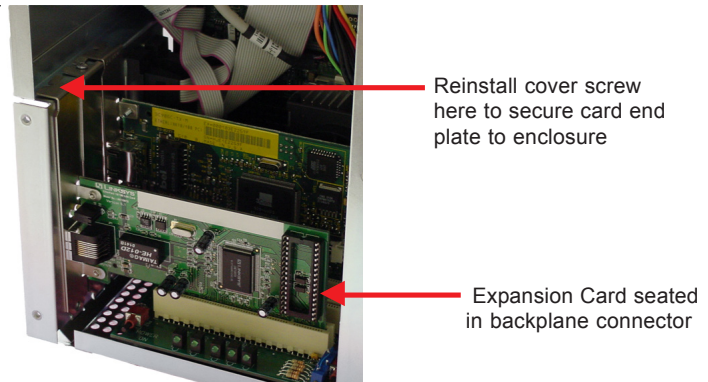
3. Remove and set aside the screw that secures the slot cover where the expansion card will be installed. Discard cover.



4. Remove the “card retaining bracket” from center posts by removing screw from back post holding card retainer. Lift up retainer and slide out of the slot in the front post.

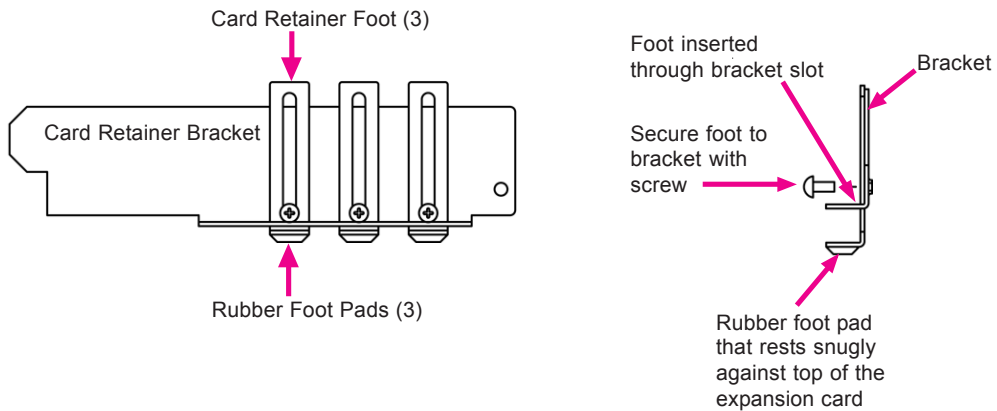


5. Insert the expansion card into the backplane connector and reinstall the screw to secure the card’s end plate to the enclosure.



7 MAINTENANCE AND UPGRADES

6. Reinstall card retainer bracket. Slide bracket into the slot in the front post and secure with a screw in the back post.
7. Adjust card retainer foot until it is securely against the top of the card that you have just installed. Tighten the screw to ensure that the card will remain properly seated in the backplane connector.
8. Replace the rear panel and reconnect the power source.



Maintenance

Preserving Data

Viruses can corrupt files; files can be inadvertently deleted; and hard-disk drives can fail after extended use. To avoid data loss, regularly back up the data files on the hard-disk drive. If you lose the contents of your hard-disk drive, you can reinstall programs, but your data files will be lost if you don't have a backup. We recommend you back up the hard-disk drive at least once a week, with a daily backup of those files that have been changed.

Cleaning External Components

To clean the exterior computer cabinet, perform the following steps:

1. Place a grounding strap around your wrist to reduce the effects of electrostatic discharge (ESD).
2. Turn off the computer and any attached devices.
3. Use a small vacuum cleaner to remove any dust from the slots and holes on the computer.
4. Moisten a soft cleaning cloth with water and liquid dishwashing detergent.



DO NOT SOAK the cloth in the solution—you must not let the solution drip inside the computer.

5. Use the damp cloth to wipe the computer housing.

Touchscreen/Display

To ensure the longevity and effectiveness of the touchscreen please take note of the following precautions:

- Do not press sharp objects against the screen.
- Do not strike the panel with hard objects.
- Do not press the screen with excessive force.
- Once the panel is mounted and has power applied, do not place any objects over the ventilation slots. This will result in heat buildup and may damage the unit.

7 MAINTENANCE AND UPGRADES

Touchscreen/Chemical Compatibility

The touchscreen has a polyester surface. The following list is provided to make you aware of the general compatibility between chemicals that may be present in your work environment and the polyester surface of the touchscreen. Use the chart to determine those chemicals that are safe to use around your Panel Computer and those that may harm the touchscreen. The list rates these chemicals as **E—Excellent**, **G—Good**, **F—Fair**, and **N—Not Recommended**. Because the ratings are for ideal conditions at 57°C, consider all factors when evaluating your application.

<u>Chemical</u>	<u>Rating</u>	<u>Chemical</u>	<u>Rating</u>
Acetone	G	Aniline	G
Auto fuel	E	Auto lubricants	E
Auto Hydraulics	E	Bromine (wet)	N
Butyl Cellosolve	E	Butyl Ether	G
Chloroform	G	Clorox	E
Coffee	E	Cupric Sulfate	E
Cyclohexanone	N	Cyclohexanol	E
Downy	E	Diethyl Ether	G
Diethyl Phthalate	G	Ethyl Acetate	E
Ethanol	E	Ethylene Chloride	G
Fantastic	E	Formula 409	E
Grape Juice	E	Heptane	E
Hexane	E	Hydrogen Peroxide	N
Isopropyl Alcohol	E	Ketchup	E
Lemon Juice	E	MEK	F
Methylene Chloride	N	Mineral Acids (dilute)	E
Mineral Acids (strong)	G	Mr. Clean	E
Mustard	G	Naphtha	G
Phenol	N	Sodium Hydroxide (dilute)	G
Sodium Hydroxide (strong)	F	Sodium Hypochlorite	E
Spray 'N Wash	E	Tea	E
Toluene	E	Tomato Juice	E
Top Job	E	Trichloroacetic acid	F
Triethanolamine	G	Vinegar	E
Wisk	F	Xylene	E
Zinc Chloride	E		

Touchscreen Cleaning

The touchscreen has a scratch resistant coating. This adds a slight chemical barrier to the screen, but the coating's primary purpose is to protect the screen from abrasion. The touchscreen should be cleaned as needed with a soft cloth dampened with warm, soapy water.

